

<b>NWS Form E-5</b> U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE  <b>MONTHLY REPORT OF HYDROLOGIC CONDITIONS</b>	<b>HYDROLOGIC SERVICE AREA:</b> Pocatello, Idaho (PIH)
	<b>REPORT FOR:</b>  <b>MONTH:</b> December <b>YEAR:</b> 2016
<b>TO:</b> Hydrologic Operations Division, W/OH2 National Weather Service National Oceanic and Atmospheric Administration Silver Spring, Maryland 20910	<b>SIGNATURE</b>  Travis Wyatt Service Hydrologist / Acting
<b>DATE:</b> January 13, 2016	
When no flooding occurs, include miscellaneous river conditions, such as significant rises, record low stages, ice conditions, snow cover, droughts and hydrologic products issued (NWS Instruction 10-924).	



An X in this box indicates that no flooding has occurred for the month within this hydrologic service area.

### **Overview:**

December was a banner month for precipitation and snowfall. There were multiple records for precipitation and snowfall in December. Most of the area was 125 to 200 percent of normal precipitation. Monthly total rainfall was 4.52 inches in Ashton and 4.29 inches in Stanley. There were 12 precipitation records for our 5 climate locations. It was very cold across the area for the month of December with most of the area running 3 to 6 degrees below normal. Four low temperature records were broken as well for our 5 climate locations. Mean average temperatures ranged from 4 degrees F for Stanley to 26 degrees F for Oakley across the HSA. There was a monthly snowfall record at the Stanley COOP station of 58.5 inches. Dubois and Driggs COOP stations had the second snowiest Decembers on record with 34.7 and 30.4 inches respectively.

As far as the short-term 8 to 14 day Climate Prediction Center Outlook is concerned, the eastern Idaho forecast is for mostly 50 percent below normal temperatures and 50 percent chance of above normal precipitation. The one-month forecast graphics are below. For the three-month outlook, the temperature forecast is equal chances for above or below normal. As for three-month outlook for precipitation, the outlook continues to be good news with a 33 to 40 percent chance of above normal precipitation pattern across all of eastern Idaho.

Of the data available for the month, the station within the HSA reaching the highest 24-hour temperature was the Massacre Rocks State Park COOP station reaching 47°F on the 5<sup>th</sup>. The station (non-SNOTEL and non-RAWS) with the lowest recorded temperature was the Stanley COOP station at -38°F on the 18<sup>th</sup>. The highest recorded 24-hr precipitation (non-SNOTEL) occurred at the Shoshone COOP station where 2.1 inches fell on the 16<sup>th</sup>. The highest recorded monthly precipitation total (non-SNOTEL) occurred at Ashton 1N and Stanley where 4.52 and 4.29 total inches respectively were recorded. The basins receiving the greatest precipitation were the Montpelier Creek, Big Lost River at Mackay, Teton River, Blackfoot River, and Malad River basins receiving 179%, 164 %, 162 %, 155%, and 152% of average precipitation respectively for the month of November-based on SNOTEL data. All river basins in our area were above average for the month.

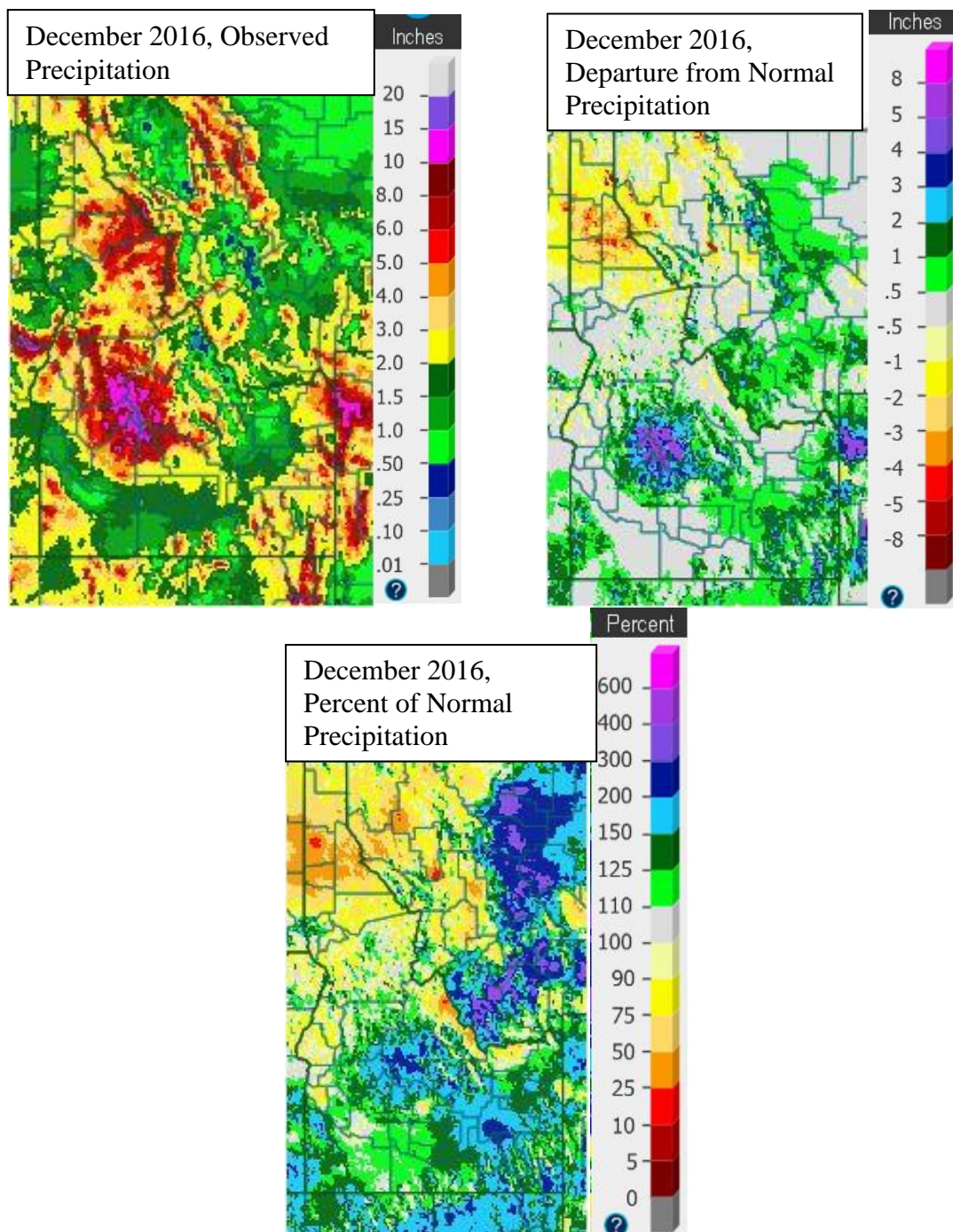
Reservoirs last month decreased capacity overall by around 10% in the upper Snake River basin system and is currently sitting at 52% of capacity overall. Compared to last year at this time, it was about 50% of capacity. According to the Natural Resources Conservation Service and U.S. Bureau of Reclamation reservoir data, the most notable decrease in storage capacity was the American Falls reservoir as well as the McKay reservoir decreasing percent capacity by 15% as well as 13% respectively. There were no increases in capacity. Only

Milner remained unchanged, all other reservoirs showed decreases in storage capacity. The Mackay reservoir currently has the highest percent of average at 156 and Palisades reservoir is at the lowest at 63% of average.

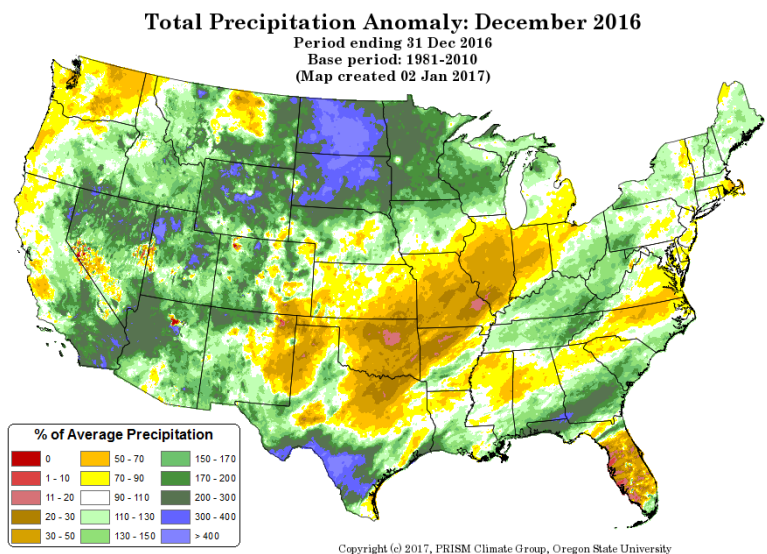
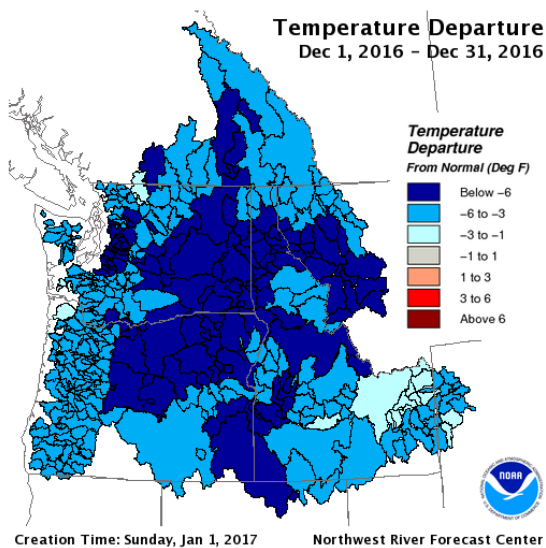
Current streamflow conditions in eastern Idaho are near normal in the mountains and slightly below normal for the Snake River plain for monthly streamflows of the unregulated streams (see USGS streamflow graphic below).

Because of well above normal precipitation, Drought conditions across eastern Idaho have significantly decreased in December as reflected on the latest U.S. Drought Monitor. Currently, 1.87 percent of the state is in Abnormally Dry drought status with about .04% of the state in Moderate Drought. The latest update of the U.S. Seasonal Drought Outlook looks for continued improvement for the eastern Idaho's drought outlook forecast.

## Precipitation:

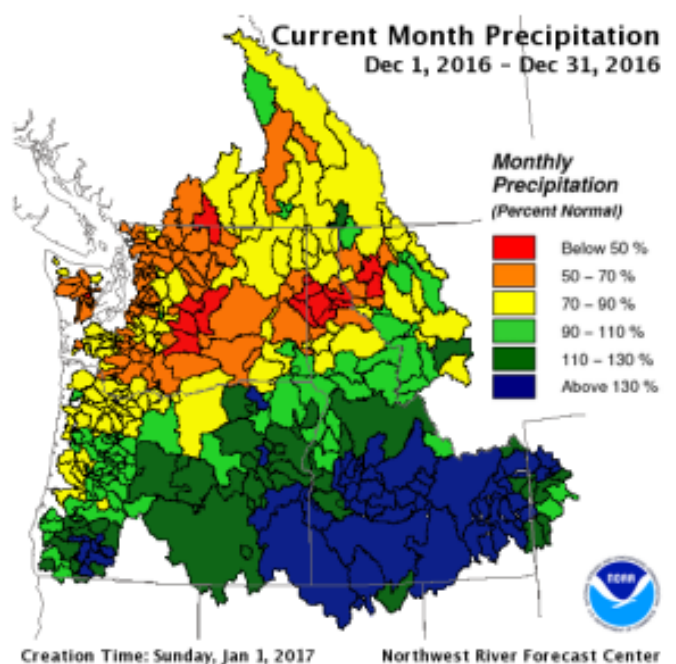
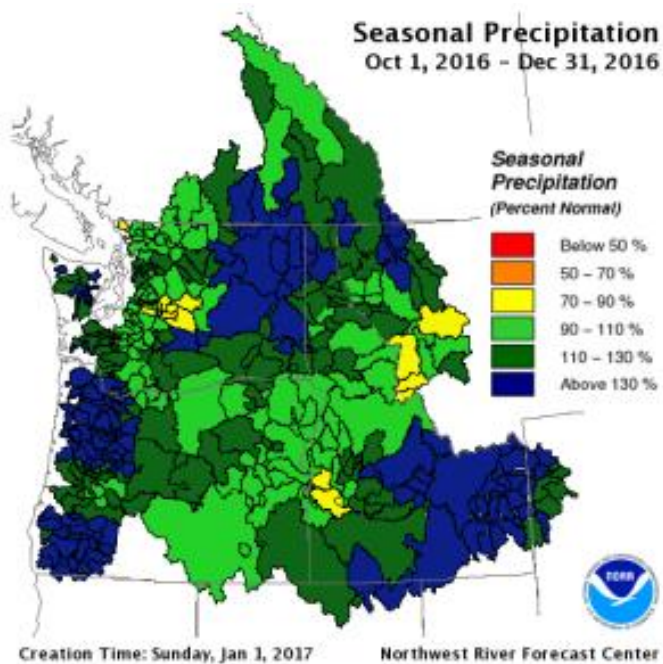


[www.water.weather.gov/precip/#](http://www.water.weather.gov/precip/#)



[https://www.nwrfc.noaa.gov/WAT\\_RES\\_wy\\_summary/20170101/CurMonMAT\\_2016Dec31\\_2017010117.png](https://www.nwrfc.noaa.gov/WAT_RES_wy_summary/20170101/CurMonMAT_2016Dec31_2017010117.png)

<http://prism.oregonstate.edu/comparisons/anomalies.php>



[https://www.nwrfc.noaa.gov/WAT\\_RES\\_wy\\_summary/20170101/SeasonalMAP\\_WY2017\\_OCT\\_DEC.2017010117.png](https://www.nwrfc.noaa.gov/WAT_RES_wy_summary/20170101/SeasonalMAP_WY2017_OCT_DEC.2017010117.png)

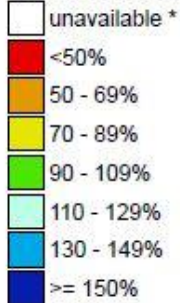
[https://www.nwrfc.noaa.gov/WAT\\_RES\\_wy\\_summary/20170101/CurMonMAP\\_2016Dec31\\_2017010117.png](https://www.nwrfc.noaa.gov/WAT_RES_wy_summary/20170101/CurMonMAP_2016Dec31_2017010117.png)



# Westwide SNOTEL Water Year (Oct 1) to Date Precipitation % of Normal

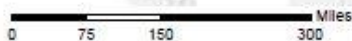
Jan 12, 2017

Water Year (Oct 1)  
to Date Precipitation  
Basin-wide Percent  
of 1981-2010 Average



\* Data unavailable  
at time of posting  
or measurement  
is not representative  
at this time of year

Provisional data  
subject to revision



The water year to date precipitation percent of normal represents the accumulated precipitation found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

Prepared by:  
USDA/NRCS National Water and Climate Center  
Portland, Oregon  
<http://www.wcc.nrcs.usda.gov>

[http://www.wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/west\\_wytdprecptnormal\\_update.pdf](http://www.wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/west_wytdprecptnormal_update.pdf)

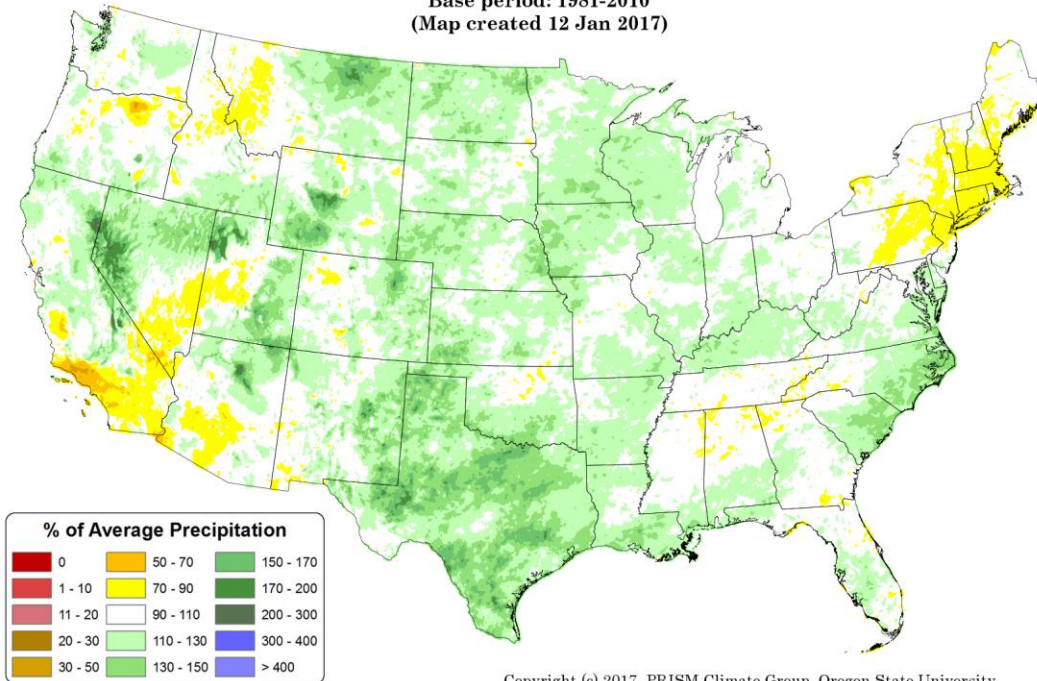
## Past 2 Years of Precipitation % of Average:

**Total Precipitation Anomaly: January 2015 - 11 January 2017**

Period ending 7 AM EST 11 Jan 2017

Base period: 1981-2010

(Map created 12 Jan 2017)



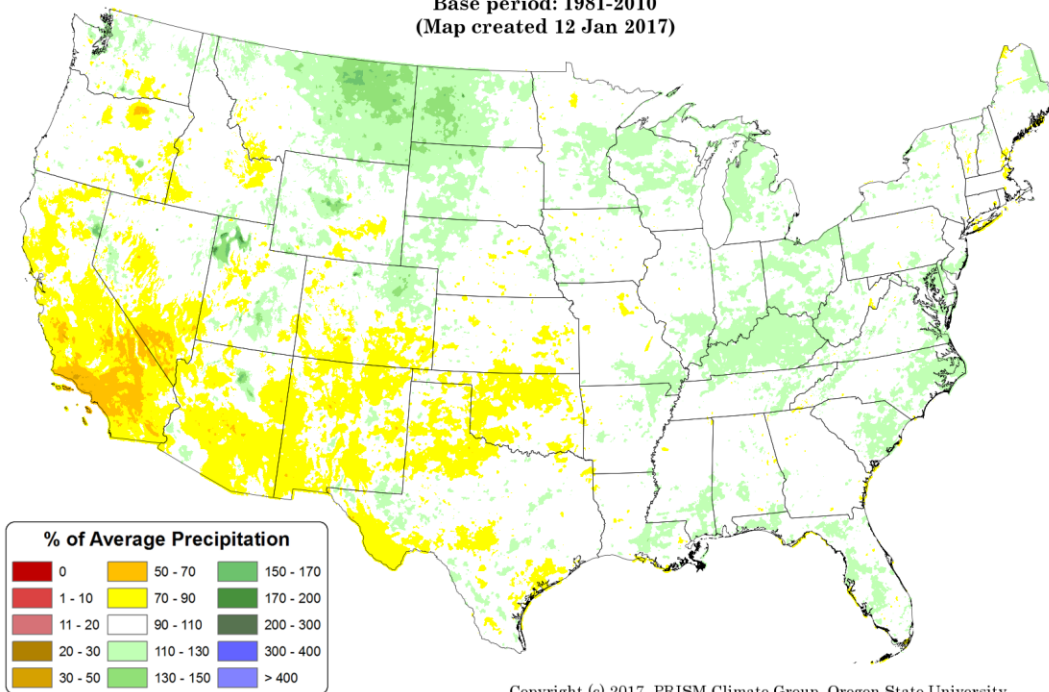
## Past 6 Years of Precipitation % of Average:

**Total Precipitation Anomaly: January 2011 - 11 January 2017**

Period ending 7 AM EST 11 Jan 2017

Base period: 1981-2010

(Map created 12 Jan 2017)



[www.prism.oregonstate.edu/comparisons/drought.php](http://www.prism.oregonstate.edu/comparisons/drought.php)



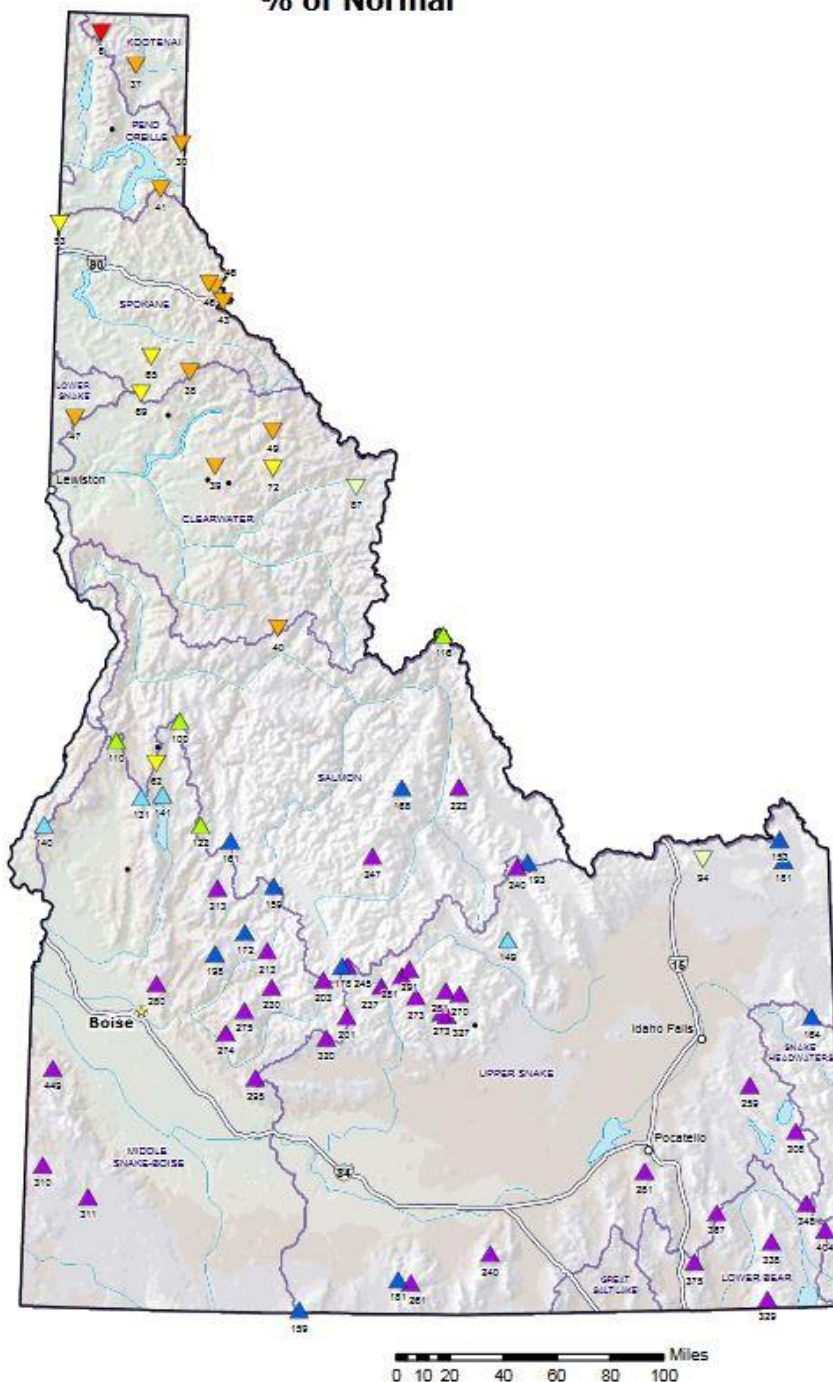
# Idaho SNOTEL Month to Date (MTD) Precipitation % of Normal

Jan 12, 2017

Current MTD  
Precipitation  
% of 1981-2010  
Average

- ▲ > 200%
- ▲ 150-200%
- ▲ 125-149%
- ▲ 100-124%
- ▲ 75-99%
- ▲ 50-74%
- ▲ 25-49%
- ▲ 1-24%
- + 0%
- Unavailable\*

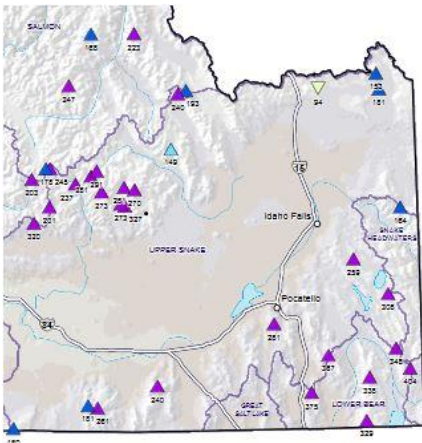
*Provisional Data  
Subject to Revision*



Prepared by:  
USDA/NRCS National Water and Climate Center  
Portland, Oregon  
<http://www.wcc.nrcs.usda.gov>

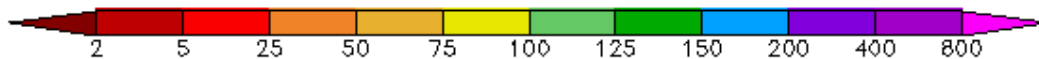
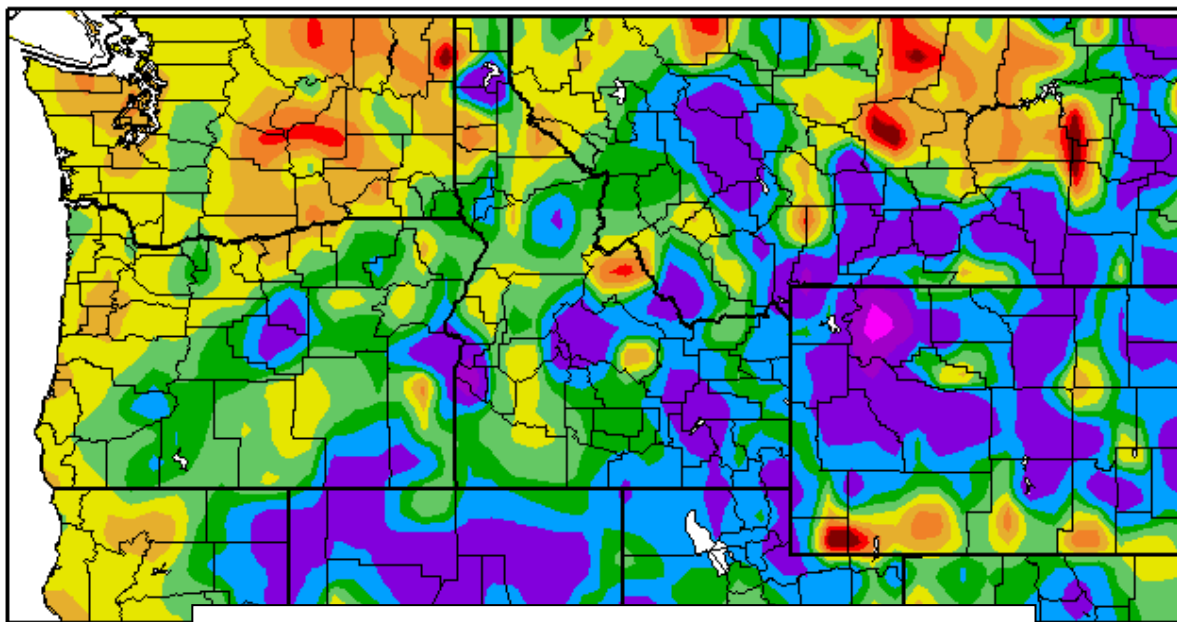
*\* Data unavailable at time of posting or  
unavailable long-term normal.*

[http://www.wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/id\\_mtdprecptnormal.pdf](http://www.wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/id_mtdprecptnormal.pdf)



**SNOTEL MTD % of Normal  
Precipitation for end of November 2016**  
(image is cropped from above image)

Percent of Normal Precipitation (%)  
12/1/2016 – 12/31/2016



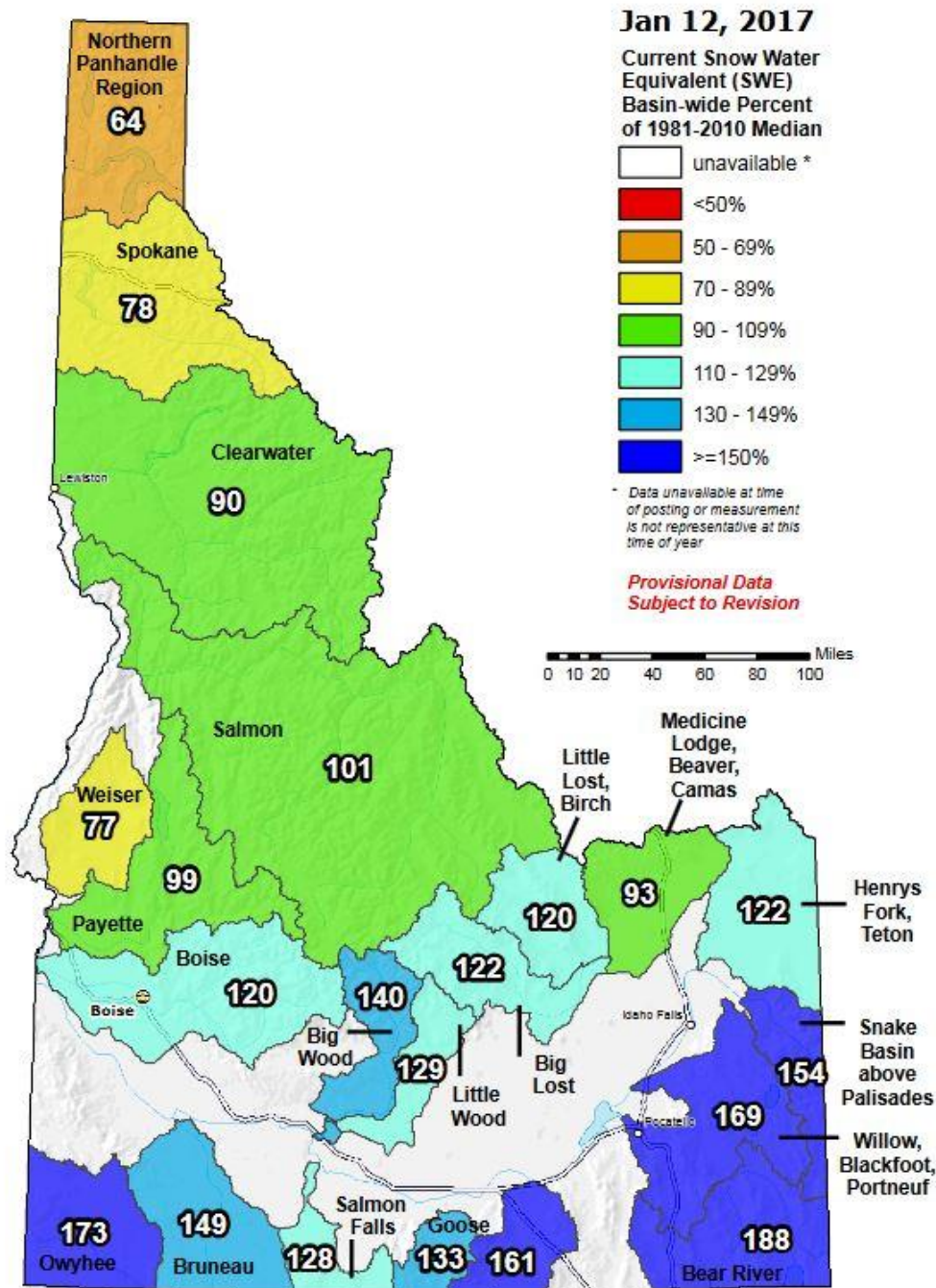
Generated 1/11/2017 at HPRCC using provisional data.

Regional Climate Centers

December was a return to well above normal precipitation that we saw in October. Most areas received 125 to 200 percent of normal with a few areas, particularly the Western Central Mountains, the lower Snake River plain and portions of the Southern Highlands and Bear Lake Region, receiving 200 to 400 percent of normal. Only the extreme Southeast part of Custer County received below normal precipitation, which ranged from 75 to 100 percent of normal.



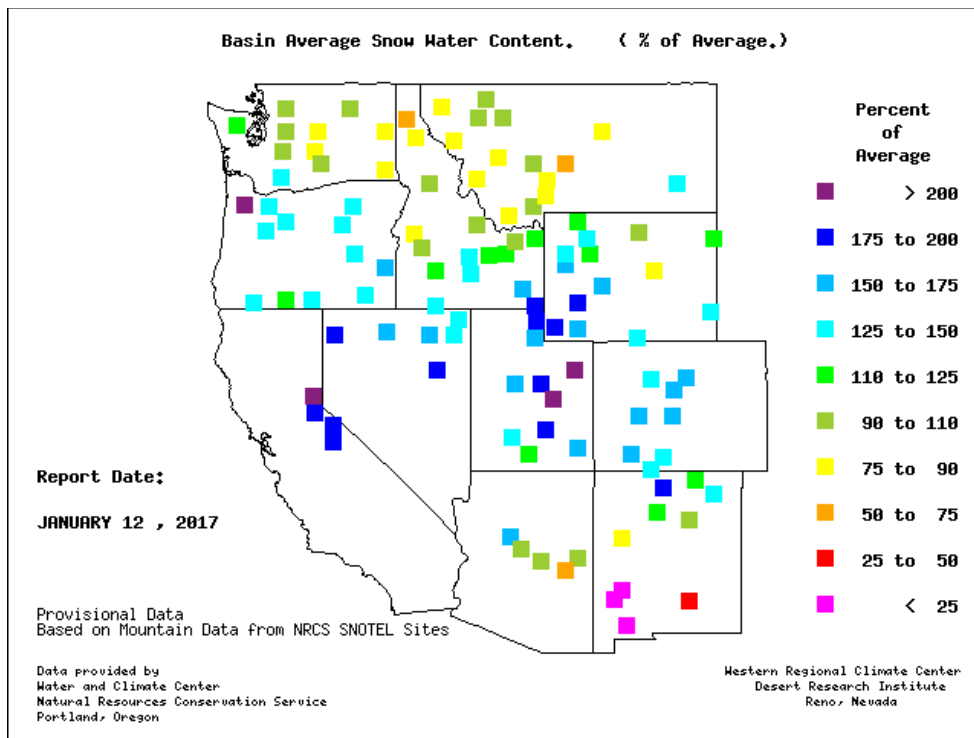
## Idaho SNOTEL Current Snow Water Equivalent (SWE) % of Normal



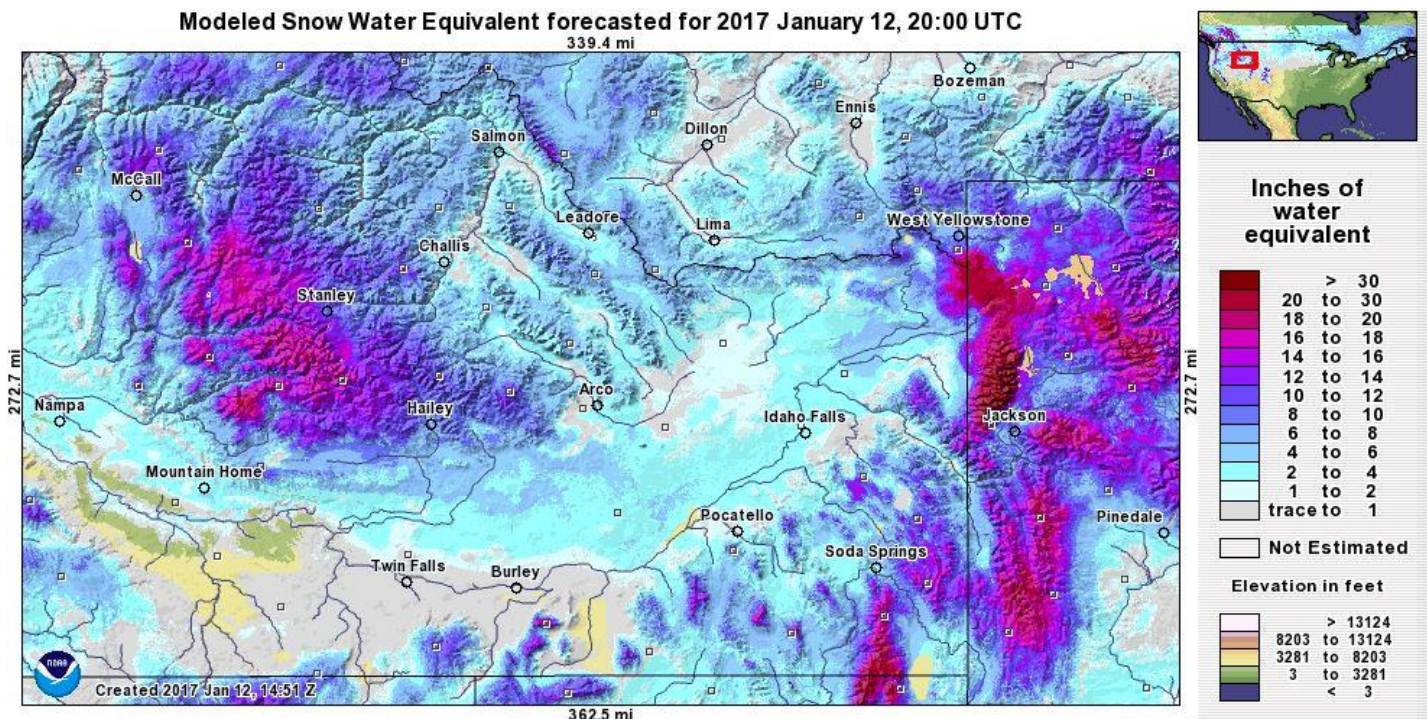
The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

Prepared by:  
USDA/NRCS National Water and Climate Center  
Portland, Oregon  
<http://www.wcc.nrcs.usda.gov>

[www.wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/id\\_sweptnormal\\_update.pdf](http://www.wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/id_sweptnormal_update.pdf)



[www.wrcc.dri.edu/snotelanom/basinswe.html](http://www.wrcc.dri.edu/snotelanom/basinswe.html)

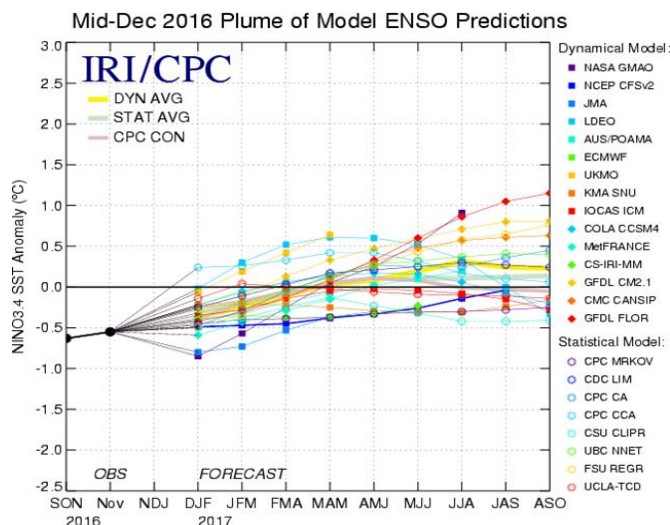
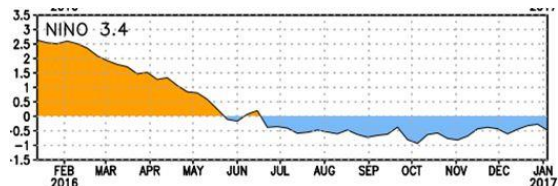


[www.nohrsc.noaa.gov/interactive/html/map.html](http://www.nohrsc.noaa.gov/interactive/html/map.html)



## ENSO Update:

**Latest Observed SST Departure: Niño 3.4 ~ -0.5 Deg C**



[www.cpc.ncep.noaa.gov](http://www.cpc.ncep.noaa.gov), [iri.columbia.edu/climate/ENSO](http://iri.columbia.edu/climate/ENSO) and

**CPC Synopsis:** La Nina conditions are present. A transition to ENSO-neutral is favored during January-March 2017.

**Note:** Equatorial sea surface temperature (SST's) are below average in the central and east central equatorial Pacific Ocean. MJO signal continues to be weak. The Pacific Decadal Oscillation (PDO) is currently slightly positive.

## Reservoirs:

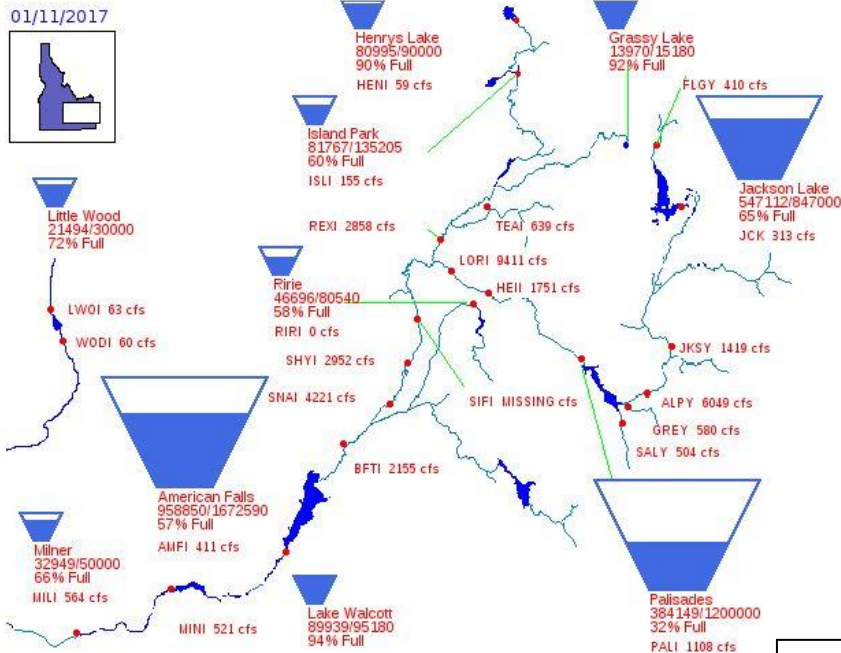
Reservoir	% Capacity November 30 <sup>1</sup>	% Capacity December 31 <sup>2</sup>	Percent Change	% of Average <sup>2</sup>	% of Average Last Year <sup>2</sup>
Jackson Lake	60	63	3	126	131
Palisades	33	39	6	63	80
Henrys Lake	86	89	3	101	95
Island Park	49	57	8	83	90
Grassy Lake	87	91	4	119	110
Ririe	54	57	3	127	122
Blackfoot	60	62	2	122	97
American Falls	37	52	15	92	73
Mackay	64	77	13	156	107
Little Wood	57	67	10	147	65
Magic	41	44	3	130	46
Oakley	18	21	3	80	59
Bear Lake	34	35	1	79	79
Lake Walcott	90 <sup>3</sup>	94 <sup>4</sup>	4	n/a	n/a
Milner	66 <sup>3</sup>	66 <sup>4</sup>	0	n/a	n/a

**Source:** (1) NRCS November 30, 2016; (2) NRCS December 31, 2016.

(3) US Bureau of Reclamation (BOR) December 8, 2016 (4) BOR January 11, 2017

[http://www.wcc.nrcs.usda.gov/ftpref/support/water/SummaryReports/ID/BRes\\_1\\_2017.pdf](http://www.wcc.nrcs.usda.gov/ftpref/support/water/SummaryReports/ID/BRes_1_2017.pdf)





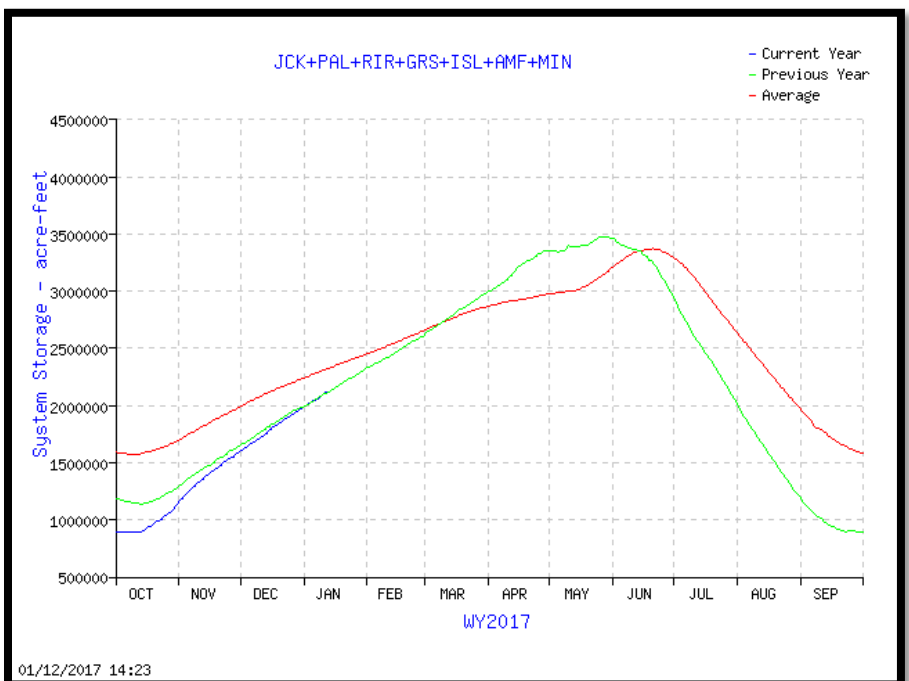
**52% of Capacity  
in Upper Snake  
River System**  
(Jackson Lake, Palisades,  
Grassy Lake, Island Park,  
Ririe, American Falls &  
Lake Walcott)

[www.usbr.gov/pn/hydromet/burtea.html](http://www.usbr.gov/pn/hydromet/burtea.html)

#### Upper Snake River:

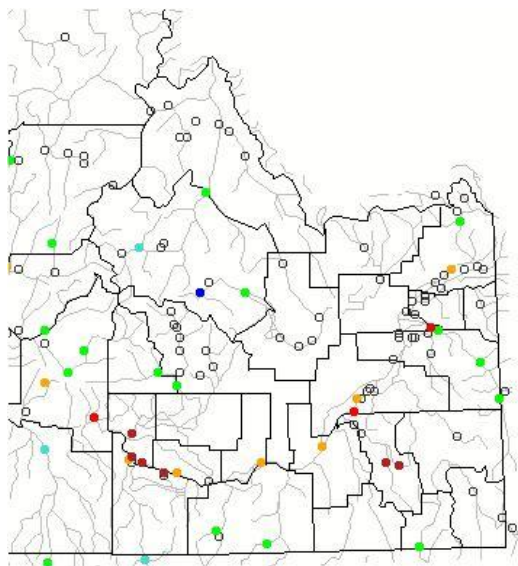
**Total Space Available: 1,923,212 AF**  
**Total Storage Capacity: 4,045,695 AF**

**Graph of Upper Snake River  
Current Total System Reservoir  
Storage**



[https://www.usbr.gov/pn-bin/graphwy.pl?snasys\\_af](https://www.usbr.gov/pn-bin/graphwy.pl?snasys_af)

## Streamflow:



Monthly average streamflow compared to historical average streamflow for December 2016.



<https://waterwatch.usgs.gov/index.php?r=id&id=mv01d>

Explanation - Percentile classes							
Low	<10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	High	Not-ranked

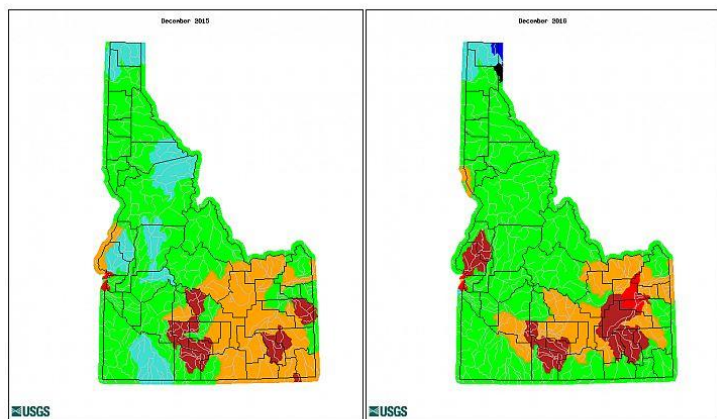
### Comparison of Streamflow Maps

Geographic area:  Water resource region:  GO

Map type:  Sub type:

Date (YYYYMM):

Date (YYYYMM):



Explanation - Percentile classes							
Low	<10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	High	No Data

[http://waterwatch.usgs.gov/index.php?id=wwchart\\_map2](http://waterwatch.usgs.gov/index.php?id=wwchart_map2)

## Drought:

### U.S. Drought Monitor Idaho

**January 10, 2017**  
(Released Thursday, Jan. 12, 2017)  
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	98.13	1.87	0.04	0.00	0.00	0.00
<b>Last Week</b> 1/3/2017	89.98	10.02	0.04	0.00	0.00	0.00
<b>3 Months Ago</b> 10/11/2016	50.36	49.64	2.03	0.00	0.00	0.00
<b>Start of Calendar Year</b> 1/3/2017	89.98	10.02	0.04	0.00	0.00	0.00
<b>Start of Water Year</b> 9/27/2016	6.14	93.86	8.89	0.00	0.00	0.00
<b>One Year Ago</b> 1/12/2016	10.95	89.05	63.25	3.66	0.00	0.00

#### Intensity

D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought
D2 Severe Drought	

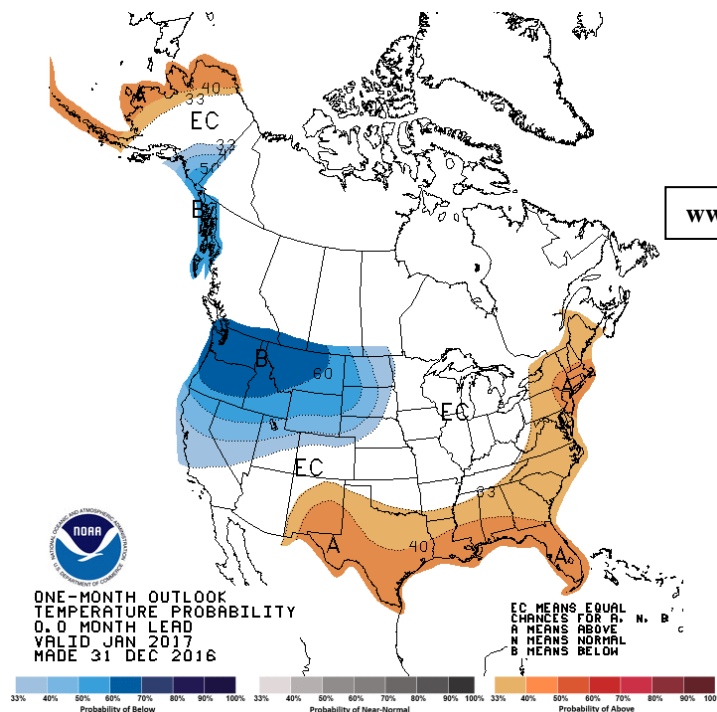
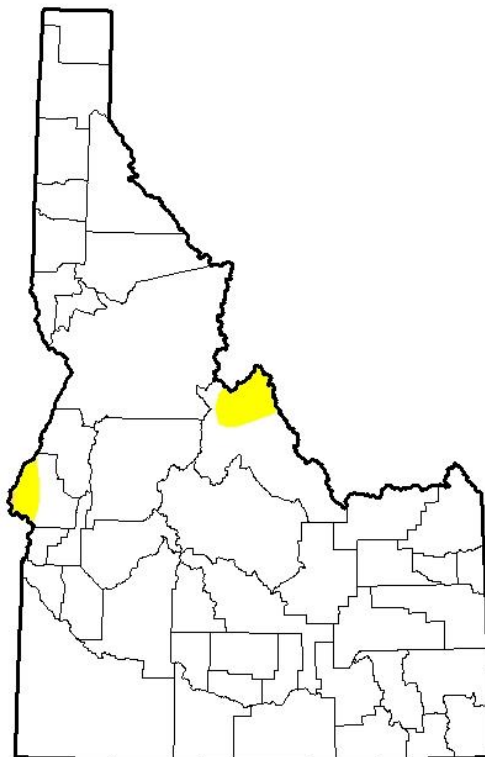
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

#### Author:

David Miskus  
NOAA/NWS/NCEP/CPC

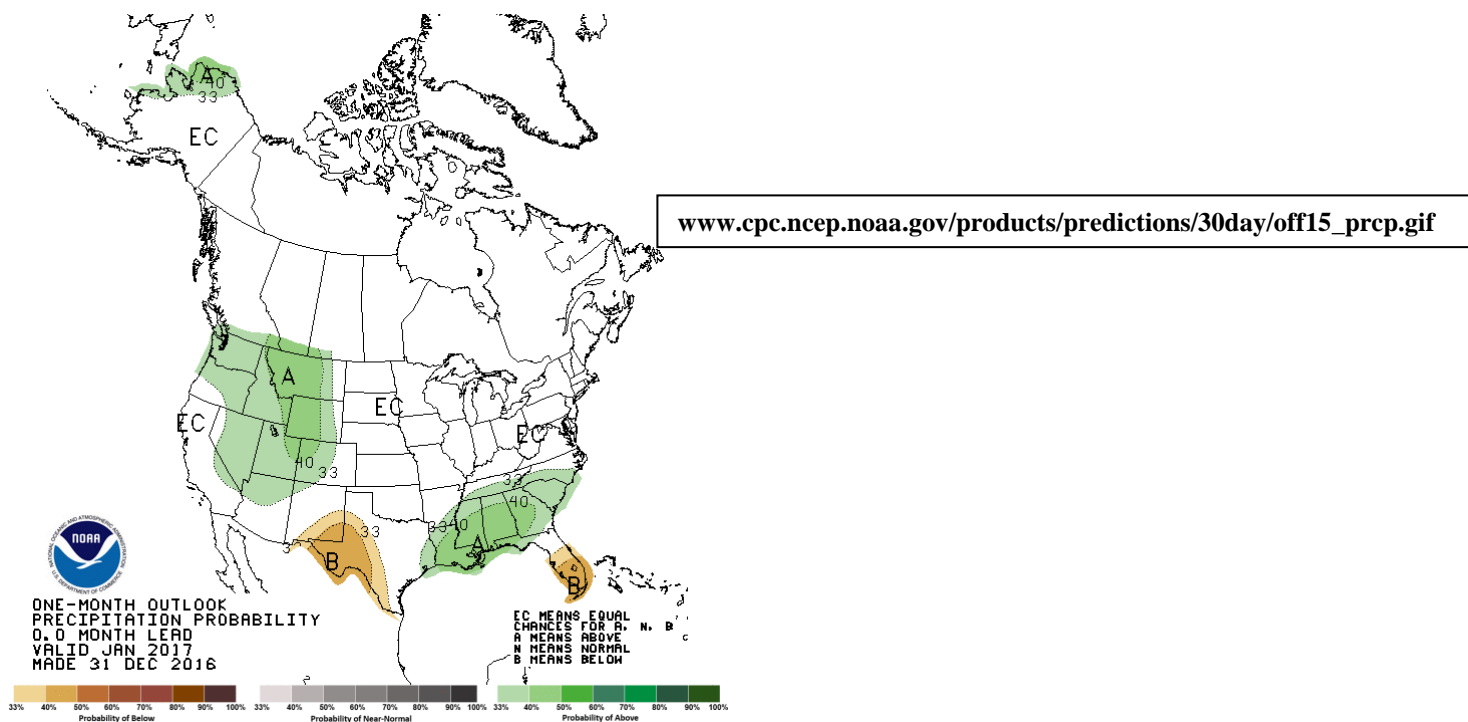


<http://droughtmonitor.unl.edu/>



[www.cpc.ncep.noaa.gov/products/predictions/30day/off15\\_temp.gif](http://www.cpc.ncep.noaa.gov/products/predictions/30day/off15_temp.gif)

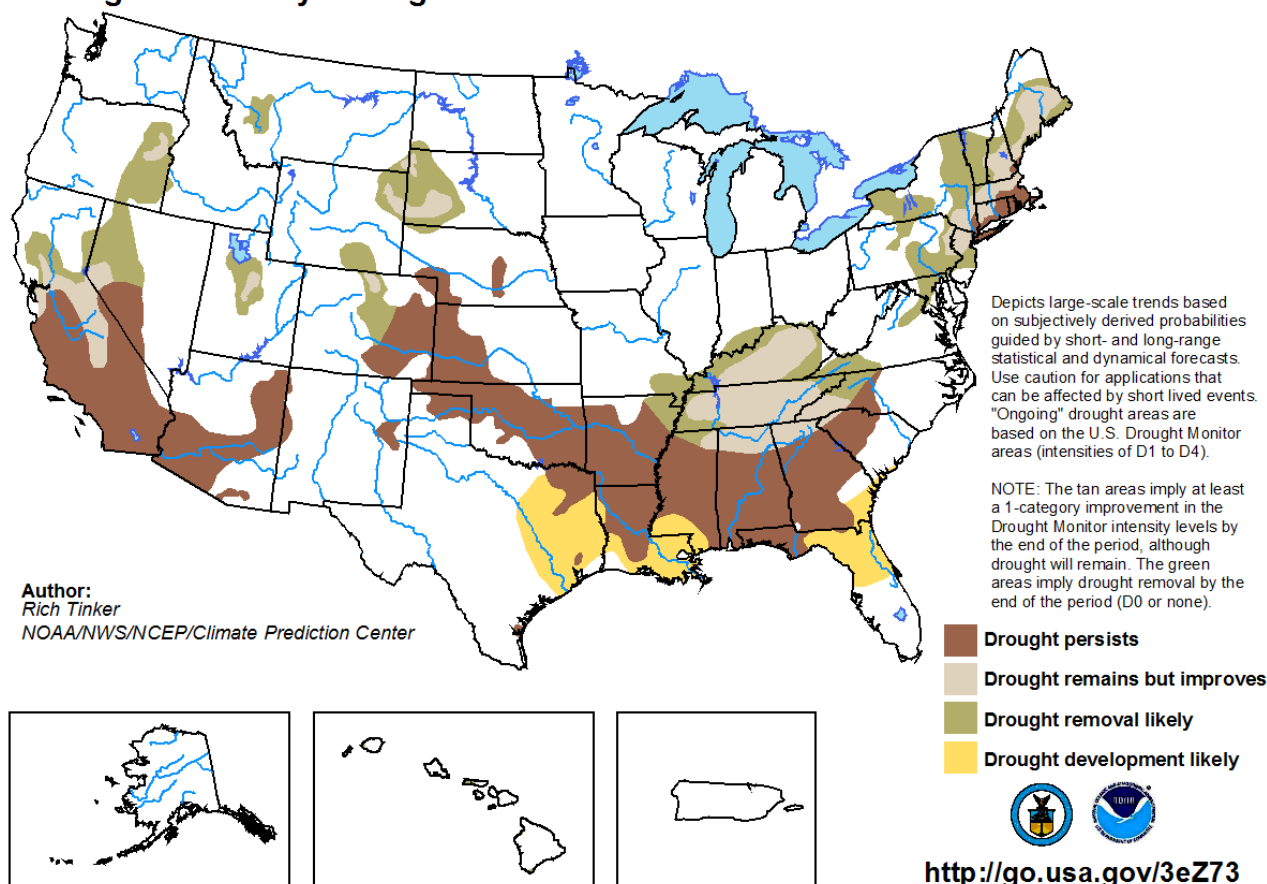




## U.S. Seasonal Drought Outlook

### Drought Tendency During the Valid Period

Valid for December 15 - March 31, 2017  
Released December 15, 2016



[www.cpc.ncep.noaa.gov/products/expert\\_assessment/season\\_drought.png](http://www.cpc.ncep.noaa.gov/products/expert_assessment/season_drought.png)

cc:  
Jeff Zimmerman, Acting Western Region HCSD  
Joe Intermill, Hydrologist-in-Charge, Northwest River Forecast Center  
Steve King, Service Coordination Hydrologist /Acting DOH, Northwest River Forecast Center  
Michelle Stokes, Hydrologist-in-Charge, Colorado Basin River Forecast Center  
Paul Miller, Service Coordination Hydrologist, Colorado Basin River Forecast Center  
John Lhotak, Development and Operations Hydrologist, Colorado Basin River Forecast Center  
Hydrometeorological Information Center  
Dean Hazen, Meteorologist-in-Charge, Pocatello, Idaho  
Kurt Buffalo, Science and Operations Officer, Pocatello, Idaho  
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Troy Lindquist, Senior Service Hydrologist, Boise, Idaho  
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PIH Mets/HMT (pih.ops)

End

cbl